

### Abstract of the Disclosure

A first component (a stator) is formed by a magnetic substance, centrally wound by a coil at an end portion in the longitudinal direction of a plurality of pieces, and periodically makes a magnetic change along the longitudinal direction of the plurality of pieces by passing an electric current through the coil. A second component (a mover) faces the first component at predetermined spacing, and has N and S magnetic poles along the longitudinal direction of the plurality of pieces. The second component can be moved relative to the first component along the longitudinal direction of the first component by differentiating the distribution of magnetic changes of the plurality of pieces of the first components on the surface facing the second component. Thus, the movable range of the mover can be extended, the cooling structure of the coil can be simplified, and the total cost can be reduced.